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Vol. 41 Friday, 18 January 1963 No. 2

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MEDICAL NEWS LETTER

Vol. 41 Friday, 18 January 1963 No. 2

Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

IMPORTANT: NEWS LETTER RENEWAL NOTICE REQUIRED

TO ALL ADDRESSEES (EXCEPT U. S. Navy and Naval Reserve personnel on ACTIVE DUTY and U. S. Navy Ships and Stations).

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—Editor

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Hypothermia as an Adjunct to Treatment of Cerebral Edema Following Decompression Sickness *

LT Allan Erde MC USN, and CAPT Harry J. Alvis MC USN, U. S. Naval Submarine Base, Honolulu, Hawaii.

The symptoms of decompression sickness, or the bends, follow exposure to increased ambient pressure with release of dissolved inert gas into the tissues as bubbles. About 90% of bends cases exhibit joint pain only. Ten percent feature additional involvement of the respiratory and central nervous systems.

A common complication in cases with central nervous system involvement is the development of cerebral or spinal cord edema, usually 3 to 12 hours after the onset of initial symptoms. It is important to control this edema in an attempt to prevent permanent destruction of vulnerable nervous tissue. Edema, with its compression of cells and blood vessels, embarrasses the blood supply to the affected tissue. This, in turn, produces increased hypoxia, causing development of more edema in a dangerous vicious cycle.

The primary treatment of all cases of decompression sickness is recompression and subsequent controlled decompression in a pressure chamber. Moderate hypothermia has been induced in a small number of cases of decompression sickness at the Submarine Base, Pearl Harbor, to counter the development of edema of the central nervous system. Its application within a recompression-decompression chamber is outlined in the following case report:

Illustrative Case Report

A 25-year old Hawaiian-Japanese civilian semiprofessional SCUBA fisherman presented himself to the Submarine Base, Pearl Harbor, on 27 August 1961, 3 hours after surfacing from his fourth dive of that day. All dives were made with single tank open-circuit SCUBA to depths estimated roughly at one-hundred twenty to one-hundred thirty feet. The diver surfaced each time only after exhausting the air in his tank. This diver was engaged in strenuous work—swimming, netting, and spearing fish during the dives.

Ten minutes after surfacing for the fourth time, the diver noted the sudden onset of sharp pain in his shoulders and elbows and mild knee pain. Shortly thereafter, his vision became blurred, his speech thick, and the diver felt dizzy and unable to stand erect. Forced to lie on the bottom of the diving boat, the diver noted that he could move his extremities only with difficulty.

Physical examination at the treatment facility revealed an obese, fully conscious and alert male who required assistance in walking. His pupils were round, regular, and equal; extraocular movements and reflexes were normal. No pulmonary or cardiac abnormality was noted. Neurologic examination revealed grossly intact cranial nerves. Deep tendon reflexes were present and equal in all extremities. No gross sensory defect was noted. Motor power in all extremities was markedly limited by joint pain.

A diagnosis of decompression sickness following repetitive dives with inadequate decompression was made, the patient placed in the recompression-

decompression chamber, and the chamber pressurized. Joint pain was completely relieved as the chamber passed one-hundred ten to one-hundred twenty feet of simulated depth. The patient was taken to a simulated depth of one-hundred sixty-five feet, and standard decompression started.

After 40 minutes of treatment, while at the one-hundred forty foot level, the patient experienced severe nausea, vomiting, and frontal head pain. Disconjugate eye motion was noted. The patient became hyperactive, thrashed about in the chamber, and was unresponsive to questions. After 100 minutes of treatment, while at the sixty foot level, the patient remarked that his head pain had become more severe. He was unable to focus his eyes on a fingertip or light, and complained of marked photophobia. His pupils remained equal in size and were only sluggishly responsive to light stimulation. The chamber was returned to one-hundred sixty-five feet of simulated depth, and measures to combat cerebral edema were instituted. The patient was surrounded with plastic bags filled with ice, and the chamber was vented more frequently to speed cooling. Intramuscular thorazine was administered intermittently to prevent shivering. Magnesium sulfate and demoral were also administered parenterally. The patient was switched from air to an 82% helium, 18% oxygen breathing mixture.

The patient's temperature reached and stabilized at 93.5° to 94° F (R) within 40 minutes. Other vital signs remained stable and within normal limits during the remainder of the course of treatment. Gradual progressive improvement in the patient's status was noted shortly after initiation of the hypothermia. Five hours after the institution of the measures noted above, when the chamber had again reached a simulated depth of sixty feet, the head pain, nausea, vomiting, and photophobia had cleared completely. The only abnormal finding on physical examination at that time was slight lag in the movement of the right eye. The ice was removed, and the patient's temperature reached 98° F (R) 90 minutes later. At no time during treatment did the patient's body temperature rise above 99° F. During the remainder of his stay in the chamber, the patient was asymptomatic, comfortable, and able to sleep and void. He tolerated one hour of breathing 100% oxygen at the thirty, twenty, and ten foot stops without untoward effect, and surfaced breathing oxygen on 27 August '61, after 37 hours and 59 minutes of decompression. Follow-up study of this patient over the following 3 months revealed no recurrence of any neurologic or other abnormality.

Discussion

Moderate hypothermia tends to reduce the central nervous system edema directly, apparently, by reduction of arterial and cerebrospinal fluid pressure (1). It also produces a decrease in brain volume or bulk, with a concomitant increase in the intracranial space not occupied by the brain (2). Decreased cerebral metabolic demands for oxygen, decreased glycogenolysis, and decreased utilization of glycogen are also noted with reduction of body temperature. By these and other actions, hypothermia affords protection against ischemic damage to the brain and spinal cord following embarrassment of circulation by edema (3). These benefits appear to outweigh the definite risks

entailed in the use of this modality, namely, ventricular arrhythmias which are seen below 32° - 30° C (4), a decrease in blood pH during hypothermia with spontaneous respiration (5), and a lowered threshold for induction and even production of seizures and other neurological abnormalities (6).

Ancillary methods of treating cerebral edema, such as the administration of hypertonic solutions or sustained hyperventilation, are not used at this facility in conjunction with hypothermia. A rebound swelling is often seen after hypertonic solutions are used. Hyperventilation is difficult to maintain for long periods of time, and tends to produce a respiratory alkalosis in the presence of moderate degrees of hypothermia which increases the risk of ventricular arrhythmias (7).

Space limitations within the treatment chamber and the necessity for keeping the bends patient conscious during decompression so that he may adjust to pressure changes and provide his attendants with indications of recurrence of symptoms of the underlying decompression sickness process, preclude the use of lytic cocktails and deep hypothermia under anesthesia. The pumps, motors, monitoring devices and other electrical equipment required for deep hypothermia which might produce an arc or spark cannot be used in the pressure chamber with its high partial pressure of oxygen; a single spark would incinerate the chamber's occupants. Moderate hypothermia, in the range of 92° to 93.5°, appears to be a practical, efficacious method of treating central nervous system edema within the confines of a recompression-decompression chamber.

Cerebral and spinal cord edema often develop in cases of decompression sickness affecting the central nervous system. Induction of moderate hypothermia within the decompression chamber counters the edema and its adverse effects. This method has been used in the treatment of a small number of bends cases and has proved beneficial. An illustrative case history is presented.

* Presented at the Second Far East Session, American College of Physicians, U.S. Air Force Hospital, Tachikawa, Japan on 11 May 1961.

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(1) Smith and Stetson, New England Journal of Medicine 265:1147, Dec. 7, 1961.
(2) Rosmoff, H. L., and Gilbert, R., Brain Volume and Cerebrospinal Fluid Pressure During Hypothermia, American Journal of Physiology 183: 19-22, 1955.
(3) Pontius, R. G., and DeBakey, M. E., in The Physiology of Induced Hypothermia: Proceedings of a Symposium, 28-29 October 1955, Division of Medical Sciences, National Academy of Sciences, National Research Council, Robert D. Dripps, M. D., Chairman and Editor, Publication #451, National Academy of Science, National Research Council, Washington, D. C. 1956.
(4) Lewis, F. J., Ring, D. M., and Alden, J. F., The Physiology of Induced Hypothermia, op. cit. p. 394.

(5) McQueen, J. D., The Physiology of Induced Hypothermia, op. cit. p 243.
(6) Horvath, S. M., and Spurr, G. B., The Physiology of Induced Hypothermia, op. cit. p. 21.
(7) Lewis, F. J., Hypothermia: Physiology and Clinical Application. The Surgical Clinics of North America 42:69, February 1962. W. B. Saunders Co., Philadelphia and London.

* * * * * *

Burn Therapy*

III. Beware the Facial Burn!

Anne Wight Phillips MD, and Oliver Cope MD. Ann Surg 156: 759-766, November 1962.

In the authors' preceding paper, respiratory tract damage is revealed as a principal killer of the burned patient today (1). This paper is concerned with the ominous significance of deep flame burns around the nose and mouth and with other clues to the presence of damage in the respiratory tree. The signs and symptoms of that damage, together with the X-ray findings and the pathologic changes, are dealt with in this article (2).

The major findings are as follows: (1) patients who suffer damage to their respiratory tracts generally have been burned by flames and in enclosed spaces; (2) development of respiratory difficulties is closely correlated with the presence of second or third degree burns of what might be called the respiratory area of the face, the area around the nose and mouth; and (3) such deep burns of the respiratory area are associated with an increased mortality rate and, in many of those who survive, with prolonged hospitalization.

Material and Plan of Study

The patients included in this study are described in detail in the second paper (1). Nine hundred and thirty-two patients were studied, of whom 181 developed respiratory difficulties. One hundred and six died. Death in 46 cases is attributed partially or entirely to respiratory tract damage (1).

As a preliminary study, the role of the burning agent in producing respiratory damage and in determining the final outcome has been investigated. The incidence of respiratory difficulties has been tabulated for each burning agent, and the findings considered in the light of each patient's age, health prior to injury, extent of burn, and extent of full thickness skin damage.

* From the Department of Surgery, Harvard Medical School, and the Surgical Services, Massachusetts General Hospital, Boston. This investigation was supported by the Research and Development Division, Office of The Surgeon General, Department of the Army, under Contract Number DA-49-007-MD-726.

Mortality rates have been similarly calculated and compared. An explanation for some of the findings has been sought, and has been found in the subsequent investigation of the importance of flame burns of the face. Since the majority of cases of respiratory difficulty have been found in patients injured by flames, the remainder of the study has been confined to flame burn cases.

The effect of confinement of the patient and fire in an enclosed space on the incidence of respiratory difficulties has been studied in 398 of the 410 flame injury cases. The remaining 12 were excluded because they were admitted more than a week after injury. The location of each patient at the time of the burn, confined or out-of-doors, has been tabulated with the presence or absence of respiratory difficulties.

Flame injuries of the face have been evaluated as portents of respiratory tract damage. The location and severity of the facial burn in each case have been correlated with the respiratory findings.

Table 1.

Incidence of Respiratory Difficulties in Patients with Thermal Injuries from Various Burning Agents

Burning Agent	Respiratory Difficulties - %	Number of Patients
Flame	40	161
Hot liquids	3	9
Electricity	4	2
Chemicals	9	3
Steam	3	1
Semi-liquid semi-solids	4	2
Hot objects	4	3
Ultraviolet light	0	0
Total		181

The duration of hospitalization in patients with and without second degree flame burns of the respiratory area of the face has been compared for all patients with minor and superficial cutaneous burns. Those with deep and extensive burns were excluded from this last portion of the study, lest the effects of respiratory tract damage on hospitalization be masked by skin-grafting procedures or other time consuming factors.

The knowledge gleaned from this study has an obvious clinical application as a diagnostic aid. Possibly, of equal importance may be its contribution to the prevention of respiratory tract damage.

Facial injury in the burned patient serves as a signal to alert the physician. The cause of the burns, the location of the patient at the time he was

hurt, and the distribution of the burns on his face will provide further clues to the presence or absence of respiratory tract damage. Only if its presence is suspected, can appropriate steps be taken to augment the patient's oxygen supply, diminish oxygen utilization, and combat respiratory tract sepsis.

Perhaps greater emphasis should be placed on protection of the airway by all those exposed to the danger of inhalation of the products of incomplete combustion. It would be informative if all burned patients were asked on admission whether they had protected their faces and, if so, with what material. Data on this subject is sorely lacking at present. However, the high incidence of respiratory difficulties and death among those with deep burns of the respiratory area, as compared with those without facial damage, warrants the assumption that facial protection may be lifesaving until proved otherwise. It is interesting, in this connection, to note that in the Cocoanut Grove catastrophe, of the 114 casualties received at this hospital, 75 were either dead on arrival or died of anoxia within minutes. Of the 39 who survived long enough to be treated, only 3 were entirely without respiratory symptoms and they had covered their mouths with wet cloths.

Summary and Conclusions

Respiratory tract damage should be suspected in every patient with deep flame burns around the nose and mouth. Eighty-eight percent of patients in the authors' study who sustained such burns while in enclosed spaces encountered respiratory difficulties.

Death has a predilection for patients with second and third degree burns of the respiratory area of the face, tending to spare those with equally extensive burns whose faces escape injury.

First degree burns of the respiratory area and severe burns of the periphery of the face do not carry the same grave prognosis.

Respiratory tract damage may be present occasionally in the absence of facial injury. The patients without facial injury in whom respiratory damage was found generally had been overcome by smoke and were found on admission to have reddened pharynges.

A majority of patients with flame burns of more than 40% of the body surfaces were found to have second or third degree burns of their respiratory areas (66%).

Confinement of both patient and fire in an enclosed space increases the respiratory hazard. Respiratory difficulties are uncommon among patients who suffer deep flame burns of the respiratory area while out-of-doors.

Flame burns are more lethal than liquid burns of equal extent. Respiratory difficulties in the flame burn cases are an important factor in the difference.

Survivors with minor and superficial burns which include second degree damage in the respiratory area require longer hospitalization than those with similar burns whose faces are spared. References:

(1) Phillips, A. W., and O. Cope: Burn Therapy II. The Revelation of Respiratory Tract Damage as a Principal Killer of the Burned Patient. Ann Surg 155: 1, 1962.

(2) Phillips, A. W., and O. Cope: Burn Therapy IV. Respiratory Tract Damage and the Meaning of Restlessness - An Account of the Clinical, X-ray, and Post-Mortem Findings. In progress.

NOTE: The original of this article and reference (1) are highly recommended reading for military personnel. Reference (1) was abstracted in the 20 April 1962 issue of the Medical News Letter (Vol. 39, No. 8, pages 11-14).

—Editor

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Further Observations on the Sickling Phenomenon *

Charles L. Vassallo MD, Wagman Fellow in Hematology, and Abraham M. Frumin MD, Attending in Hematology. Amer J Med Sci 244:442-445, October 1962.

The sickling phenomenon in wet preparations of sickle cell trait red blood cells (RBC) is dependent on the formation of reduced hemoglobin. This may be accelerated by increased temperature (Shen, Fleming, and Castle), decreased pH (Hahn), and reducing substances (Daland and Castle). Inhibition of sickling has been noted with decreased temperature (Shen, Fleming, and Castle), increased pH (Hahn), carbon monoxide (Tosteson, Shea, and Darling), cyanide (Tomlinson and Jacob), and multiple saline washings (Hahn and Gillespie, Josephs). The authors report an extension of such findings and the effect of abnormal hemoglobin pigments on this phenomenon. Further observations on sickling of RBC in the absence of S hemoglobin are reported.

Materials and Methods.

Sickle cell trait (AS) was confirmed by routine hematologic studies, paper and starch electrophoresis, fetal hemoglobin, and ferrohemoglobin solubility. Wet preparations were sealed in paraffin, incubated at room temperature, and observed in 24 hours. Observations before that time resulted in variable readings with some preparations. Oxalated venous blood was used and diluted only with test solutions except for washed cell suspensions. Isotonic sodium nitrate was used to form methemoglobin; ammonium chloride and hydrogen peroxide to form sulfhemoglobin (Harris et al). The concentrations of these pigments, measured according to the method of Evelyn and Malloy, were greater than 70%. RBC were washed in isotonic sodium chloride or potassium chloride with volumes at least ten times the original blood sample. Isotonic potassium thiocyanate and a 1:1000 potassium cyanide were employed. Oxalated blood from a patient with Thalassemia-I disease and a positive sickling preparation was obtained (Atwater et al).

* From the Department of Laboratories and Medicine, Albert Einstein Medical Center, Southern Division, Philadelphia, Penna.

Washed sickle cell trait red blood cells will sickle on addition of vitamin C and bisulfite, but not on return to their own plasma.

Sickling of sickle cell trait red blood cells is inhibited by methemoglobin and sulfmethemoglobin but not by sulfhemoglobin. Potassium cyanide inhibits sickling and this inhibition is reversed by addition of vitamin C or bisulfite. Potassium thiocyanate is without effect.

Sickling of Thalassemia-I red blood cells differs from sickle cell trait red blood cells in that vitamin C will not initiate sickling, more bisulfite is required, and methemoglobinemic red blood cells sickle on the addition of bisulfite.

* * * * * *

Wilson's Disease

Arne Nordoy, Medical Department A (Head, P.A. Owren, M.D.), Rikshospitalet, Oslo, Norway. Acta Medica Scandinavica, Vol. 172, fasc. 4, 1962.

Hepatolenticular degeneration (Wilson's disease) is caused by an autosomal inherited defect with inability to synthesize a normal ceruloplasmin, the plasma copper protein. This is a bluish α_1-globulin containing 8 atoms of copper per molecule and of molecular weight 151000. The normal plasma concentration is about 30 mg/100ml. The exact function of ceruloplasmin is not known.

Experiments with radioactive copper (Cu^{64}) have shown that the major part after intestinal absorption is temporarily incorporated into the liver copper protein (CuLP). From this store, about 0.5 mg Cu in 24 hours is transferred into ceruloplasmin. Ceruloplasmin contains about 95% of the total plasma copper, the remaining 5% being loosely bound to the serum albumin.

Latent or manifest Wilson's disease exhibits four characteristic abnormalities: (1) partial or complete deficiency of ceruloplasmin, the total plasma copper being decreased with a few exceptions; (2) increased non-ceruloplasmin copper; (3) increased copper content of many organs, especially the liver, brain, and kidneys; (4) increased excretion of copper in the urine.

Homozygotes develop symptoms of basal ganglia disorder, hepatic cirrhosis, Kayser-Fleischer rings in the corneae, and tubular and glomerular renal dysfunction. Some cases have multiple minor fractures, and bluish lunulae at the bases of the nails are found in some 20% of cases.

All these symptoms seem to be closely related to abnormal copper deposits. One clinical type shows mainly progressive lenticular degeneration which starts in childhood or early youth and progresses rapidly with a fatal outcome within months. A second type with predominantly hepatic and renal involvement is seen in middle-aged patients and has a more protracted course.

In the family studied, 10 cases had died from lenticular degeneration. One case presented a manifest clinical syndrome, whereas 14 cases showed a reduced ceruloplasmin content in plasma, but without clinical symptoms.

Case Report

A 33-year old man was admitted to the Department of Medicine in September 1961 because of tremor and abdominal distress. He had been in good health until 1954 when he suddenly had melena and was admitted to another hospital. No lesion was disclosed in the gastrointestinal tract. A vitamin K resistant hypoprothrombinemia of 40-50% (P-P method) was found, indicating liver disease, but all other liver tests were normal. During the following years, he developed pigmentation of the legs, tremor of the head and right hand, and also, in the last months before admission, abdominal distress.

Physical examination revealed spider naevi on the upper part of the thorax. The liver could not be felt, but he had an enlarged spleen. He showed titubation of the head, tremor, hyperreflexia and retardation of the active movements of the right upper extremity, typical Kayser-Fleischer rings and pigmentation of the skin on the legs.

The urinalysis was negative except for urobilinuria. Results of laboratory tests are given in a table. An X-ray picture of the esophagus showed no varices.

For verification of the diagnosis of Wilson's disease, the investigations shown by table were carried out. (These determinations were performed by Dr. O. Skaug at the Central Laboratory, Lier Mental Hospital.) The serum ceruloplasmin determination was confirmed by column chromatography. Determination of amino acids in the urine by paper chromatography showed increased excretion of glycine, serine, glutamine, alanine, and threonine. (The determination was performed by Dr. P. Bjørnstad at the Central Laboratory, Rikshospitalet.)

On an ordinary diet, the urinary excretion of calcium was 310 mg/24 hrs, of phosphorus 1245 mg/24 hrs and of uric acid 860 mg/24 hrs. The peroxidase reaction in the leukocytes was positive.

Treatment

The influence of three chelating agents on the urinary copper excretion was first investigated. BAL and penicillamine have been used before. Desferrioxamin is a new drug which has been tried as an iron chelating agent. BAL and desferrioxamin gave no significant increase in the copper excretion. Penicillamine gave a maximal urinary copper excretion on a daily dosage of 1.45 g with an average excretion of 3 mg/24 hrs. The patient was treated as follows:

1. A diet which contained less than one mg of copper a day.
   (a) Special attention was paid to the water. The water in the patient's home was analyzed for copper and found to contain between 0.33 and less than 0.05 mg copper/l depending on when the water was taken. This was explained when it was found that the last 50 cm of the waterpipe was made of copper.
   (b) A high protein diet was preferred to promote excretion of copper bound to amino acids in the urine.

2. Drug therapy.
   (a) Potassium sulfide, 40 mg orally in capsules with each meal was used. Any dietary copper is thereby rendered insoluble and excreted via the feces.
   (b) D-penicillamine (di-methyl cysteine) in dosage of 150-300-150-300 mg daily, orally on empty stomach. The dosage was adjusted according to the urinary excretion of copper. If this amount was less than one mg in 24 hrs the dosage was increased.

No toxicity of the therapy was noted. There occurred a remarkable and definite clinical improvement in four months with regress of the neurologic symptoms. The titubation of the head disappeared completely and the tremor and ataxia of his right upper extremity improved. He regained working ability and was able to write by hand which he had not done for some months. Liver function tests showed some improvement.

Family History

The family pedigree is illustrated. Three brothers and a sister of the patient's father had died at an age of 10 to 15 years with symptoms of rapidly progressing lenticular degeneration. Twin brothers of the patient had died at the ages of 13 and 14 years with similar symptoms. Autopsy revealed hepatic cirrhosis in one of the boys. Wilson's disease was further found in three female and one male maternal cousin of the patient's father.

The ceruloplasmin and total copper levels in the serum of members of this family are shown by table. Fourteen of these had a decreased serum ceruloplasmin level. They were all healthy.

Discussion

Knowledge is still lacking concerning the nature of the biochemical abnormalities in Wilson's disease and the exact mechanism of the tissue damage—whether it is caused by copper deposition as such or by other factors. The clinical diagnosis of Wilson's disease is based on a history of similar illness in the family, characteristic symptoms of hepatic and neurologic disorder, Kayser-Fleischer rings in the cornea on slit-lamp examination, and the specific laboratory findings. Deficiency of normal ceruloplasmin, increase in urinary copper excretion, and increase in the copper content of the liver are findings which are sufficient to make the diagnosis even if there are no clinical symptoms, except in the heterozygous carriers of the disease. Palos reported on a negative peroxidase reaction in the leukocytes as characteristic in Wilson's disease. This observation was not confirmed in the author's patient.

Administration of ceruloplasmin has been tried without effect. Stimulation of ceruloplasmin synthesis with estrogens has also been tried, without success except in one case. Therapy should aim at producing a negative copper balance by reducing the copper content in the diet, reducing the absorption of copper from the gut and removing copper from the body. The use of chelating agents and a low copper diet will probably make the future of these patients more hopeful. Since Walshe, in 1956, first reported the use of penicillamine

in the treatment of hepatolenticular degeneration, many promising reports have appeared. Side effects are rare and only occasionally is a temporary withdrawal necessary. In the case reported, the improvement of the neurologic symptoms was striking. It may take months in some cases before improvement is noted, and in some patients no improvement has been observed.

It may be important for the life expectancy of these patients to diagnose the latent stage of the disease and start prophylactic treatment before irreversible tissue damage has developed.

* * * * * *

MISCELLANY

SEAPOWER - The Navy and Cuba

By The Honorable Fred Korth, Secretary of the Navy

The Navy of today is a far cry from the Navy of 21 years ago, when seapower was measured in the number and size of battleships. Shortly thereafter, the aircraft carriers became the queen of the seas, and sea battles were sometimes won by aircraft launched from ships that never saw each other except as an image on a radar screen. There has been a technological revolution that has evolved new hardware, vastly complicated weapons systems, and new dimensions to the manner in which we wage war.

And yet, vast elements of the old Navy still remain strong and vital. Historically, we have stressed the concept of mobility, versatility, and flexibility of forces which includes the capability of congregating the proper mix of land, surface, subsurface, and air forces in a specific troubled area—the balanced fleet concept. Technological developments have increased our potential and our capabilities enabling us to respond more effectively to the needs of the Nation. The answer to the question as to whether the operational philosophy of the Navy has changed in view of scientific progress, in a word, is no. That our philosophy has been tremendously enhanced by the significant developments is a better description.

We have 20 nuclear attack submarines deployed with the fleets, along with nearly 100 conventionally powered ones. By next July, we will have an even dozen POLARIS submarines operational with 16 missiles on board each of them. We have 36 ships in the fleet equipped with missiles, two of them being nuclear powered. These ships with the ability to cruise for long periods and with their advanced missile systems, have aided us immeasurably in gaining and maintaining superiority against air threats and against shore and other

surface targets. From the decks of our splendid carriers can be launched aircraft with twice the speed of sound and able to carry more firepower than the old heavy bombers dropped in World War II. The Marines now have the use of a new breed of carriers, built from the keel up as a helicopter transporter from whose decks can be launched a reinforced battalion of Marines to execute a vertical envelopment of the enemy position.

These are some of the things that make up our strength. The most important factor in combat capability, manpower, has also been improved. Without skilled dedicated and experienced men in the Navy and Marine Corps, that team could not exist. It was the high state of training and the instant combat readiness of these men, and those in all our armed forces, which gave the President a free hand in taking his firm position in the Cuban crisis. The existence and capability of all these fighting forces enabled him to select the time, the place, and the method of coping with agression.

It is a splendid lesson we have learned from the entire Cuban operation. From the Navy point of view, we were faced with a most rigorous challenge. Our forces met that challenge successfully and proved conclusively that mobile flexible naval forces still are, and will continue to be an effective instrument in national policy. The ability of the several services to effect superb liaison—between ships and both land-based and carrier-based planes—was well demonstrated and efficiently executed. The entire country was made aware of the skill and devotion of the men and women in uniform, and of the understanding support which they in turn could depend upon from their families and from the enlightened citizens of our land.

I can truthfully state that our posture is outstanding. It is my fervent hope—which is shared by all those of the Navy Department, both in uniform and out—that we shall continue to have the finest, strongest, most modern Navy and Marine Corps in the world, manned by superior personnel who are loyal, motivated, and dedicated to their tasks. This we have—and this we must keep, each and every day in the future. Our responsibilities as a member of our Nation's defense team are many. With our capabilities, however, we can discharge each of those missions. We are continually striving to ensure that our position never changes. —NavNews, 15 December 1962.

* * * * * *

BUMED INSTRUCTION 5215.4C 7 December 1962

Subj: Manual of the Medical Department, U.S. Navy (NavMed-P-117)

This directive sets forth instructions concerning the Manual of the Medical Department as to (a) command responsibility, (b) distribution policy, (c) return of surplus copies, and (d) replacement of defective binders.

BuMed Instruction 5215.4B is canceled.

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BUMED INSTRUCTION 6250. 10 Change Transmittal 11 December 1962

Subj: CH-1 to BuMed Instruction 6250. 10 of 16 January 1962, Subj: Diethyltoluamide insect repellent; issue and use of

This Change Transmittal is being issued to effect a pen change to the stock number in the first sentence, paragraph 2 of basic Instruction, from FSN 9YF6840-878-3888 to FSN 9YF6840-753-4963.

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Medicolegal Booklet Distributed

Over two years of research and preparation have resulted in the completion of a booklet, "Medicolegal Problems in Blood Transfusions." This final publication of the Joint Blood Council, Inc., is now being distributed without charge to each listed blood bank, hospital, and organization listed in the latest issue of "Directory of Blood Transfusion Facilities and Services." The total mailing list is 5000 and no additional copies are available.

The author of the booklet is Charles H. Randall Jr., Professor of Law, University of South Carolina, Columbia, S. C. The report consists of a Summary Statement of Conclusions and a Memorandum of Law. The classification of the Summary Statement is from the medical perspective while that employed in the Memorandum of Law is in terms of legal theory. To permit use of the two sections together, Professor Randall has cross referenced the legal section in the Summary. The Summary Statement presents in capsule form potential areas of legal liability. The Memorandum of Law is intended for use by lawyers representing hospitals or blood banks, as well as Member Institutions of the JBC.

From: Frank E. Wilson, M. D., Executive Vice President, Joint Blood Council, Inc., Council News Briefs, 7 December 1962.

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Civil Relief Act Revised

JAG Notice 5840 of 1 November 1962 advises all personnel of an amendment to Section 514 of the Soldiers and Sailors Civil Relief Act which relates to tax exemptions in states other than the domiciles of service personnel. The amended section (514 (1)) reads as follows:

> "Where the owner of personal property is absent from his residence of domicile solely by reason of compliance with military or naval orders, this section applies with respect to personal property, or the use thereof, within any tax jurisdiction other than such place of residence or domicile, regardless of where the owner may be serving in compliance with such orders." (continued)

It must be noted that this section of the Act, as amended, provides no exemption from the taxes imposed by the place of residence or domicile ("home state") of a member of the Armed Forces. Whether service personnel are subject to state income and personal property taxes will depend upon the laws of their "home" or domiciliary state or jurisdiction.

—NavNews, 15 December 1962

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Seminar in Clinical Pathology

CAPT P. F. Dickens Jr, MC USN, Commanding Officer of the U. S. Naval Medical School, NNMC, Bethesda, Md., announces a Seminar in Clinical Pathology to be presented on Wednesdays from 1300 to 1400 during the period 16 January to 12 June 1963. All sessions will be held in Room 325, Building 1 of the National Naval Medical Center.

The U. S. Naval Medical School is sponsoring these weekly presentations in various branches of clinical pathology to create a better understanding and appreciation of laboratory diagnostic procedures in the practice of clinical medicine. Much emphasis will be placed on the pathogenesis of diseases and correlation between the clinical progress of patients and pertinent laboratory findings.

A cordial invitation is extended to medical officers of the Armed Forces and of other Federal services and agencies in the Greater Washington, D. C. area to attend any or all of the seminar meetings. Requests for enrollment should be addressed to Commanding Officer, U. S. Naval Medical School, NNMC, Bethesda 14, Md. The schedule will be as follows:

1963	Speaker	Title
16 Jan	Dr. George Z. Williams National Institutes of Health	Clinical Laboratory Management
23 Jan	Dr. F. William Sunderman Jefferson Medical College	Qualitiy Control in Clinical Chemistry
30 Jan	Dr. George P. Blundell Oscar B. Hunter Memorial Laboratory, Wash., D. C.	Fluorescent Antibody Techniques
6 Feb	Dr. Charles Brodine Naval Medical Research Institute	Current Hematologic Problems
13 Feb	Dr. Leonard Laster National Institutes of Health	Small Bowel Malabsorption Syndromes
20 Feb	Dr. Robert F. Norris Pepper Laboratories, Philadelphia, Penna	Transfusion Hepatitis

1963	Speaker	Title
27 Feb	Dr. Carroll M. Leevy Seton Hall College of Medicine and Dentistry	Liver Regeneration
6 Mar	Dr. George Brecher National Institutes of Health	Current Hematologic Problems
13 Mar	Dr. Phillip Custer Laboratories, Presbyterian Hospital, Philadelphia, Penna.	Diagnosis and Classification of Leukemia
20 Mar	Dr. George Schreiner Georgetown University Hospital	The Biochemistry of Uremia
27 Mar	Dr. George Schreiner Georgetown University Hospital	The Clinical Microscopy of Pathologic Urinary Sediments
3 Apr	Dr. William H. Crosby Jr, Walter Reed Army Institute of Research	Current Hematologic Problems
10 Apr	Dr. Leandro M. Tocantins Jefferson Medical College	Thrombocytopenia
17 Apr	Dr. S. Brandt Rose Chestnut Hill Hospital, Philadelphia, Penna,	A Critical Evaluation of Bacterial Sensitivity Methods
24 Apr	Dr. Paul Schmidt National Institutes of Health	The Clinical Importance of the Blood Factor D^u
1 May	Dr. Charles Brodine Naval Medical Research Institute	Current Hematologic Problems
8 May	Dr. David Turner Mt. Sinai Hospital, Baltimore, Md.	The Analysis of Lipids and Steroids by Gas Chromatography in Clinical Chemistry
15 May	Dr. Makio Murayama National Institutes of Health	The Chemical Structure of Hemoglobin
22 May	Dr. David Hsia Children's Memorial Hospital Chicago, Ill.	Disturbances of Renal Transport Mechanism
29 May	Dr. F.B. Gordon Naval Medical Research Institute	The Arthropod-Borne Encephalitides
5 Jun	Dr. William McFarland Mt. Alto Veterans Administration Hospital	Current Hematologic Problems
12 Jun	Dr. Leon N. Sussman Beth Israel Hospital, New York City	Blood Grouping Tests in Relation to Medicolegal Problems

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From the Note Book

Consultant Appointed to Neuropsychiatric Research Unit, San Diego. Doctor Donald Lindsley, Professor of Psychology and Physiology, University of California at Los Angeles, has been appointed a consultant to the U. S. Navy Medical Neuropsychiatric Research Unit, San Diego. Dr. Lindsley, a scientist of international reputation, is a member of the National Academy of Sciences. He has performed highly significant research on the function of the reticular formation of the brain. As consultant to the Neuropsychiatric Research Unit, he will advise on current as well as proposed research conducted there.

Doctor Busch Receives Urology Award. Lieutenant Frederick M. Busch MC USN, a resident in Urology at the U. S. Naval Hospital Philadelphia, has received a letter of appreciation "for his efforts and contribution in making the Tenth Kimbrough Urological Seminar another outstanding and successful meeting." The letter was written by Colonel K. E. Van Buskirk MC, U. S. Army, Course Director, and was forwarded on behalf of Major General Jack W. Schwartz MC, U. S. Army, Commanding General of Letterman General Hospital, San Francisco, where the seminar was conducted. Dr. Busch's presentation, "Roentgenographic Visualization of Testicular Lymphatics," won the James C. Kimbrough Memorial Award, a donation by Colonel Kimbrough's widow "to be used toward the purchase of urological books."

Colonel Kimbrough is well remembered for his notable contributions to the progress of Urology in the U. S. Army. Through his great leadership, residency training programs were formalized, strengthened, and intensified, and many of his trainees assumed positions of great clinical responsibility throughout the Service. He was always particularly attentive to the welfare and development of his residents, and was highly instrumental in establishing and operating programs which led to ultimate certification of his medical officers by the American Board of Urology. Additionally, the Colonel was a staunch advocate of continuing education for urologists in the form of refresher courses, clinical research, and professional meetings, both regional and national in scope. He was highly respected and admired by his colleagues in civilian and military urology throughout the United States and abroad.

General Schwartz, who sponsored the Seminar, is one of the U. S. Army's most eminent urologists, having attained certification by the American Board of Urology and served several years as Chief of Urology at the Walter Reed General Hospital, Washington, D. C. He was formerly Commanding General of Tripler U. S. Army Hospital, Hawaii; is a Fellow of the American College of Surgeons and a member of the American Urological Association, and the American Medical Association. He holds the Purple Heart and the Legion of Merit with Oak Leaf Cluster decorations.

Navy Will Sponsor Study of Behavior of Mountain Team. The Navy will sponsor a psychological study of the behavior of members of a U. S. mountain climbing team when they attempt to scale the world's highest peak, Mount Everest,

this coming spring. This will be the first American attempt to conquer Everest which was first scaled by a British expedition in 1953. The group of nineteen climbers, to be supported by thirty-six Sherpas and five hundred porters, includes James Ramsey Ullman, popular novelist whose books include The White Tower, a man-against-mountain tale.

Support of this American Mount Everest Expedition by award of a $35,000 Navy contract was given, says the Office of Naval Research, primarily because the attempt presents "a unique opportunity to observe behavior under real life conditions of extreme environmental physiological and psychological stress. "Not only will valuable information be gained on the extent to which behavior varies under such extreme conditions, but it is also felt that the experience of the expedition will throw important light on the performance of military tasks in cold climates," added ONR.

A noted Los Angeles psychologist, Dr. James T. Lester Jr, will observe and collect information for the Navy-supported behavioral study. (AFPS)

Civil Service Act is 80 Years Old. Federal installations, employee groups, and public-spirited organizations throughout the United States will observe the 80th anniversary of the Civil Service Act during January 1963.

In his proclamation of this event, President Kennedy urged the people of the nation to participate in the observance. In response to this call, Federal agencies are cooperating with citizen employee organizations in a variety of community programs, including award ceremonies, open houses, and anniversary dinners.

Signed on January 16, 1883, the Civil Service Act "has stood the test of time in providing the excellence in civil service which is required for successful execution of Federal programs and policies which have deep significance to all Americans and all citizens of the free world," said President Kennedy in his proclamation. Washington (AFPS)

Doctor Hansen Receives Ribbon Award for Outstanding Exhibit. It has been learned that LT James E. Hansen MC USN designed the layout and contents of the exhibit, "Oncology and the Otolaryngologist." It was presented at Las Vegas, Nevada, 4 - 8 November 1962 at the annual meeting of the American Academy of Ophthalmology and Otolaryngology. Since returning to USNH Portsmouth, Dr. Hansen has received notice that the American Board has certified him in Otolaryngology.

Recent Visitors to U. S. Naval Medical Research Institute, NNMC, Bethesda. The Surgeon General of the French Navy, VADM E. C. M. LeBreton, accompanied by CAPT P. H. Bonnel, visited NMRI and the other commands of the National Naval Medical Center on 9 and 10 October. The French doctors were on a countrywide tour to acquaint themselves with the organization, doctrine, and operating procedures of the Navy's Medical Department. Of particular interest were the new developments in the treatment of atomic radiation casualties and new concepts in the preservation of human blood, which brought about visits to many medical installations on both coasts.

DENTAL SECTION

Periodontal Disease

WHO Chronicle, World Health Organization, Geneva, Switzerland, 15(4): 151-155, April 1961.

Although it is common knowledge that gingivitis can lead to loss of teeth, for most people "dental disease" is almost synonymous with "dental caries." This attitude is reflected in the training of dentists, which has been concentrated on operative and prosthetic dentistry, while the diagnosis and treatment of disease of the structures supporting the teeth have been largely neglected. In the dental schools of the USA, for example, the time devoted to the teaching of periodontology during 1958 averaged 83 hours—only 2.1% of the total curriculum. Yet surveys made by the American Dental Association indicate that, in men over the age of 35 and women over the age of 40, periodontal disease is responsible for 2-3 times as many extractions as dental caries. In North American populations, the periodontium showed some sign of disease in nearly every adult examined, and evidence of gross and extensive tissue destruction was present in about half those still retaining some teeth at the age of 50 years. As far as can be judged from available data, the prevalence and severity of periodontal disease in most other parts of the world are at least as great as in North America.

With the aim of focusing world-wide attention on the importance of this problem, WHO last year convened a meeting of an Expert Committee on Dental Health[1] to review present knowledge of the subject and suggest how the control of periodontal disease should be attempted. In the introduction to the Committee's report[2] it is pointed out that "the damage caused to the supporting structures of the teeth by periodontal disease in early adult life is irreparable, whilst in middle adult life it destroys a large part of the natural dentition and deprives many people of their teeth long before old age." This state

1 Members of the Committee: Dr R. D. Emslie, United Kingdom (Rapporteur); Professor A.-J. Held, Switzerland; Dr Jarmil Kostlan, Czechoslovakia (Vice-Chairman); Dr A. L. Russell, USA (Chairman); Professor K. L. Shourie, India; Dr Sayed Sweilim, United Arab Republic. Secretariat: Professor B. Cohen, United Kingdom (Consultant); Dr F. Bruce Rice, WHO (Secretary); Dr L. Verhoestraete, WHO: Professor Jens Waerhaug, Norway (Consultant).

2 Wld Hlth Org. techn. Rep. Ser., 1961, 207.

of affairs is by no means inevitable, however; if the public could be persuaded to seek early dental care and follow advice on prevention, the prevalence of periodontal disease and the severity of its sequelae could be considerably reduced. Intensive dental health education is therefore the key to the control of this neglected disease.

Course of the disease

In general, local rather than systemic factors appear to be responsible for initiating periodontal disease. The most important single etiological factor is undoubtedly the deposition of bacterial plaque. This consists mainly of living micro-organisms, and although these are usually considered to be non-pathogenic they are present in high concentration. Moreover, as the organisms multiply, the plaque tends to grow below the gingival margin towards the apex of the tooth and is thus constantly in contact with a large area of soft tissue. The irritation produced by the bacteria and their toxins invariably leads to degeneration of the crevicular epithelium with inflammation of the adjacent connective tissue and formation of a pathological pocket in the gingival crevice. The apical spread of the bacterial plaque is opposed by the activity of the polymorphonuclear leucocytes and other defence mechanisms. If these mechanisms are not sufficiently powerful, the plaque may reach the apex of the tooth well within a normal life span.

Often the visible part of the gingiva may appear normal, in spite of severe inflammation in the connective tissue close to the tooth. However, the exudation of pus, composed of polymorphonuclear leucocytes, tissue fluid and epithelial cells, is a sure sign of the presence of subgingival plaque or calculus. The inflammatory reaction is accompanied by progressive destruction of the periodontal fibres and resorption of the alveolar wall. This loss of supporting structures is a permanent one and may progress to the point where the tooth falls out.

The deeper layers of the bacterial plaque often degenerate and become calcified to form calculus or tartar, which is firmly attached to the tooth. Supragingival calculus, if excessive, causes gingival recession and eventual loss of the tooth. Subgingival calculus has an irritating action which aggravates the inflammatory reaction produced by the bacterial plaque. Moreover, the surface of the calculus is often rough and may cause direct trauma to the soft tissues during mastication.

Apart from the inflammatory forms of periodontal disease (gingivitis, periodontitis), the periodontium may also be subject to degenerative changes or it may be the site of neoplastic processes. The Committee decided, however, to confine its attention to the inflammatory diseases, since these are not only by far the most common but also the most readily preventable and treatable.

Prevention and treatment

Periodontal disease does not usually affect the very young, although the onset may be as early as puberty in susceptible persons. The prevalence and severity

increase with increasing age, and in later life the disease causes much distress. Since the damage caused by periodontal disease is irreparable, preventive measures should be instituted early in life. The aim must be to prevent the accumulation of bacterial plaque and to ensure healthy development of the periodontal structures, so that they are able to resist infection should it occur. Diet is of twofold importance: a correctly balanced diet for the pregnant mother and the growing child will contribute to normal growth and development of the periodontium, while the inclusion in the diet of raw, fibrous foods helps to clean the teeth and gingiva during mastication. It is particularly important to provide an adequate intake of proteins and vitamins and the correct quantity and ratio of mineral salts. Raw, fibrous foods not only clean the teeth but also cause considerable wear (attrition) which compensates for the continual eruption of the teeth. If the diet consists mainly of soft, pappy foods, this effect is lacking, with the result that the clinical crowns of the teeth gradually increase in length. Thus the stagnation areas for bacterial plaque and calculus around the gingival margins become farther apart and less subject to the self-cleaning action of mastication. There is also an increased risk of occlusal trauma with longer teeth.

To prevent the accumulation of bacterial plaque and the formation of calculus, the teeth and gums should be brushed after every meal, or at least twice a day. This also helps to stimulate the blood supply and increase keratinization of the gingiva. It is important that a correct technique should be used to ensure efficient cleaning and avoid injury to the gums. The mouth should be thoroughly rinsed with plain or flavoured water after tooth-brushing to remove loosened debris. Tooth-brushing and mouth rinsing are rarely sufficient to remove debris from between the teeth, however, and for this purpose it is usually necessary to use interdental sticks, elastic bands, or dental floss, particularly where there is evidence of inflammation or recession of the papillae.

Ideally every person should pay regular visits to the dentist, preferably every six months, for examination of the teeth and periodontium. On these occasions, any deposits of calculus that have formed since the previous visit should be removed with proper instruments and a check made for incipient disease. Thorough scaling and polishing of the teeth and the maintenance of perfect oral hygiene by the patient are the essentials of effective treatment, but in advanced cases, surgical operations on the gums, selective tooth grinding, or the fitting of special appliances may also be necessary.

Another responsibility of the dentist is to prevent or correct overcrowding of the teeth and malocclusion. Instanding or outstanding teeth interfere with natural or artificial cleaning, increase stagnation of debris, and are often associated with gingival recession. A further consequence may be lack of lip-seal, resulting in mouth-breathing. The absence of the diluting and cleansing effect of saliva tends to favour bacterial action, while the debris dries on the teeth and becomes more difficult to remove. In some types of malocclusion, the gingiva may be damaged by the teeth of the opposing jaw, or excessive pressure between opposing teeth (occlusal trauma) may aggravate existing periodontal disease.

Badly designed dental restorations and improperly fitted prosthetic or orthodontic appliances may also be of etiological significance in periodontal disease. The dentist should ensure that the restorations maintain the normal contour of the teeth and provide adequate contacts between them. Overhanging or rough edges, which favour stagnation of bacterial plaque, should be avoided or corrected. Removable appliances should be fitted in such a way that they leave the gingival margins free and, if they have to be worn at night, they should be taken out frequently for cleaning.

Not all the above measures will be readily applicable in every country. The correction of faulty dietary habits is a slow process, even where suitable foods are available. Improvement in oral hygiene should, however, be within the reach of all populations, and in this sense the prevention of periodontal disease is largely a personal responsibility; the main tasks of the public health authority are therefore to educate the public in preventive measures and to provide an adequate dental health service.

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Warning on Evacuator Item

Joint FMSO-FLDBRBUMED NOTICE 6710 dtd November 20, 1962.

Evacuator, Oral Cavity, Dental, 110 Volt, 60 Cycle, AC "Vacudent Company Model C-2," manufactured by Densco, Inc.

It has been determined that the subject item presents an electrical shock hazard to the operator. This was found to result from contact between the live terminals on the underside of the toggle switch, mounted in the secondary arm of this unit, and the metal cover or shield on the underside of the arm.

Activities having units of subject item on hand are to report the number to, Chief, Field Branch, Bureau of Medicine and Surgery, 3rd Avenue and 29th Street, Brooklyn 32, New York. These activities will then be forwarded detailed instructions and material for the corrective action to be accomplished.

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Personnel and Professional Notes

Hole-In-One Golf Trophy Awarded. Captain J. L. Kenner, DC, USN, Head, Oral Surgery Department, U. S. Naval Dental Clinic, Norfolk 11, Virginia, was presented with a Bureau of Naval Personnel Hole-in-One trophy from Rear Admiral, E. G. F. Pollard, DC, USN, for the ace he scored at the Elizabeth City Manor Golf Course in Portsmouth, Virginia.

Commander D'Vincent and Lieutenant White Present Course. Commander R. C. D'Vincent, DC, USN, and Lieutenant D. R. White, DC, USNR, presented a course entitled "Dental Operating Room Efficiency in the Navy" at the U. S. Naval Training Center, San Diego, California, 14-16 Jan. 1963. The course was designed to acquaint Navy Dental Officers with the principles of time and motion economy in treating patients. It stressed the value of remaining imaginative in this field and set forth suggestions for operative procedures and room arrangements when practicing with traditional equipment. While retaining the present high qualities of the profession, emphasis was placed on a reduction in fatiguing factors for both the dentist and his assistant while increasing the productivity of the operating team. The course made no attempt to interfere with the technical details of restorative procedures which may vary from one dentist to another.

Newly Standardized Items Available for Issue.

FSN	Nomenclature	Unit Issue	Price
6520-721-6289	Bur, Dental, Excavating, AHP, Tungsten Carbide No. 2, 6s	Pkg	2.50
6515-817-2275	Needle, Hypodermic, Cartridge Type, Disposable, 25 Gage, 13/16", 250s	Bx	10.50
6515-817-2276	Needle, Hypodermic, Cartridge Type, Disposable, 25 Gage, 1-3/16", 250s	Bx	10.50
6515-817-2277	Needle, Hypodermic, Cartridge Type Disposable, 27 Gage, 1-3/16", 250s	Bx	12.00
6515-817-2278	Needle, Hypodermic, Cartridge Type Disposable, 27 Gage, 13/16", 250s	Bx	12.00
6525-817-2363	Mount, Radiographic Film, Dental, 16 Film, 25s	Pkg	1.40
6525-817-2364	Mount, Radiographic Film, Dental, 2 Film, 25s	Pkg	.48

Warning on Disposal of Anesthetics, Needles. A warning to physicians and dentists concerning the disposal of ampules of local anesthetic solutions and discarded hypodermic needles appeared in a recent issue of the Bulletin of the University of Rochester Department of Pharmacology.

The publication reported incidents involving teen-age boys who rummaged through refuse from dental offices to obtain partially used ampules and old hypodermic needles. Anesthetics so obtained have been used by youths for "experiments" on animals and even for "kicks" on themselves. Local police confiscated 17 ampules from one boy who admitted selling a number of them to other youngsters.

The recommendation is made that all dentists and physicians make certain that ampules are empty and hypodermic needles rendered unusable before they are discarded.

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PREVENTIVE MEDICINE

Plagued by Tropical Acne

Science News Letter, 82(2): 21, 14 July 1962.

Tropical acne is one of the worst U. S. Military Service health problems in the Southwest Pacific, and is expected to be troublesome in Viet-Nam.

Dr. Marion B. Sulzberger of the U. S. Army Surgeon General's office and professor emeritus of dermatology at New York University, stated that tropical acne during World War II at times exceeded all other diseases for which men were evacuated home from the South Pacific.

"It is too soon to know whether this will be the case with men in South Viet-Nam," Dr. Sulzberger said, "but we are anticipating something of the same problem."

Ordinarily the acne decade is between the ages of 13 and 22, but in cases of tropical acne, men in their late 20's and early 30's are affected.

Tropical acne is partly caused by unhygienic conditions in which men cannot keep their skin sufficiently clean, but the heat and humidity are mainly to blame. The skin never really dries out, and germs have a holiday. Staphylococcus infection results when the horny substance of skin closes up the oil glands' openings.

At a closing session of the American Medical Association meeting in Chicago, Dr. Sulzberger asked physicians to pay more attention to the seriousness of acne. It comes at a time when young people can least withstand its effects, and it can leave lifetime scars both physically and psychologically.

The acne of the late teen-ager is usually due to imperfect sex hormone adjustment, which causes the oil glands of the skin to become plugged, with resulting infection. Scrubbing with soap and water, along with other simple treatment, will often keep acne under control, but patients should not attempt to treat themselves with drugstore preparations.

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The 25th anniversary of Pennsylvania's clean streams law is observed in a report entitled "People and Water." This year, 71% of the State's waste-discharging industrial plants are treating wastes, compared with 8% in 1940, and 72.5% of the population in residences connected to sewerlines are served by sewage treatment plants, compared with 24.2% in 1935.

(US DHEW PHS Public Health Reports 77(12):1040, December 1962)

Histoplasmosis Survey of Preschool Children in Panama

Charles F. Abildgaard and Robert L. Taylor, Amer J Trop Med II(5): 666-669, September 1962.

Studies in recent years have confirmed the endemic status of histoplasmosis in Panama and the Canal Zone. In a skin test survey of 1,000 patients at Colon Hospital (Cristobal, Canal Zone) 10 years ago, 38.7% were found to react to histoplasmin. However, only 4 of 230 children under the age of 10 years (1.7%) were histoplasmin positive in this study. A more recent survey of 9,324 Canal Zone school children, between the ages of 5 and 19 years, revealed a range of 13.2 to 91.8% positive reactors to histoplasmin. Because of the lack of information concerning histoplasmosis in younger children a study was undertaken to elucidate: (1) Information on the reaction to histoplasmin in a large group of preschool children, and (2) clinical and serologic information concerning histoplasmosis infection in this age group.

The patient source for the study included infants and children from age 6 months through 6 years seen on the pediatric ward at Coco Solo Hospital or in the hospital outpatient department. Coco Solo Hospital provides medical care for approximately 25,000 people on the Atlantic side of the Canal Zone and almost all of those included in the present study reside in this area.

Materials and Methods

All children included in the study received both histoplasmin 1:100 (Parke, Davis & Co.) and purified protein derivative of M. tuberculosis (PPD, intermediate strength) intradermal skin tests. Tests were read at 48 to 72 hours; all reactions of 5 mm or greater induration were considered positive.

All patients with positive histoplasmin skin test reactions were evaluated more completely, the following information and studies being obtained: (1) History of residence; (2) clinical history and evidence of active disease on examination; (3) chest x-ray with repeat examination in approximately one year when possible; and (4) serologic studies (50% end point complement-fixation tests using histoplasmin and whole yeast antigens.)

A total of 631 children were studied. There were 327 males and 304 females. Of the total number 110 were white, almost all of these being United States citizens, the non-whites being Panamanians. There were 40 (6.3%) with positive reactions to histoplasmin compared with 22 (3.5%) with positive tuberculin tests. When 144 histoplasmin negative children were retested during the 2 years this study was in progress, only one showed conversion to histoplasmin hypersensitivity. The incidence of positive histoplasmin reactions increased with age, varying from 0.9% under 1 year to 15% at 5 to 6 years.

Despite the lack of clinical evidence of disease, 47% of the children who were hypersensitive to histoplasmin had complement-fixing antibodies.

Calcifications were noted on the first film in 4 patients, the youngest being 2 years old. On follow-up films of 20 children three revealed calcifications not previously noted.

The prevalence of positive reactors to histoplasmin in the preschool children studied increased with age, and when the findings were combined with the school survey on the Atlantic side of the Canal Zone a gradually increasing prevalence from 1 year of age through 19 years of age was noted.

Similar skin test surveys including preschool children have been conducted in known endemic areas of histoplasmosis in the United States. In a large series from Tennessee reported in 1946 by Christie et al., 268 children under 7 years of age were tested, and a survey at Ft. Leavenworth, Kansas, reported by Anderson et al. in 1958 included 733 children under 7 years. The local findings in the same groups revealed prevalence rates between those of the above-mentioned studies and were compatible with what might be expected in an area endemic for histoplasmosis.

The benign nature of histoplasmosis even in this younger age group was evident in the present study. Although histoplasmosis is a common infection it appears to be an uncommon disease. One cannot, however, overlook the possibility of histoplasmosis as a disease, especially in infants in an endemic area. It is worth noting that 3 of 7 known cases of progressive disseminated histoplasmosis occurring in Panama have been in infants under the age of 1 year.

Further studies of histoplasmosis in infants and children are presently underway in the Republic of Panama, where patients at Hospital del Nino are being skin tested and definitive studies conducted on positive reactors. When completed this study will add further information on histoplasmosis in Panamanian children.

A survey of 631 preschool children in Panama and the Canal Zone revealed an over-all prevalence rate of 6.3% hypersensitivity to histoplasmin and 3.5% hypersensitivity to PPD skin tests.

Among 40 children with positive histoplasmin skin tests there was evidence of clinical disease in only 3. Roentgenograms of the chest revealed infiltration or adenopathy in 6 and calcifications in 4. Complement-fixation tests were positive in 19.

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Geographic Variation in the Prevalence of Histoplasmin Sensitivity in the Panama Canal Zone

Robert L. Taylor, Mycology Section, Middle America Research Unit, Balboa Heights, Canal Zone. Amer J Trop Med II(5): 670-675, Sep 1962.

Paradoxically, little data are available to estimate the prevalence and distribution of histoplasmin sensitivity in the Panama Canal Zone where the first three cases of the disease were described by Dr. Samuel T. Darling in 1906. Darling continued his search for histoplasmosis and in 1909 reviewed his three cases and suggested that improved sanitation may have influenced his inability

to find additional cases. Further evidence of the disease in this area was nonexistent until the report of a canine infection in 1945 added impetus to the local study of histoplasmosis.

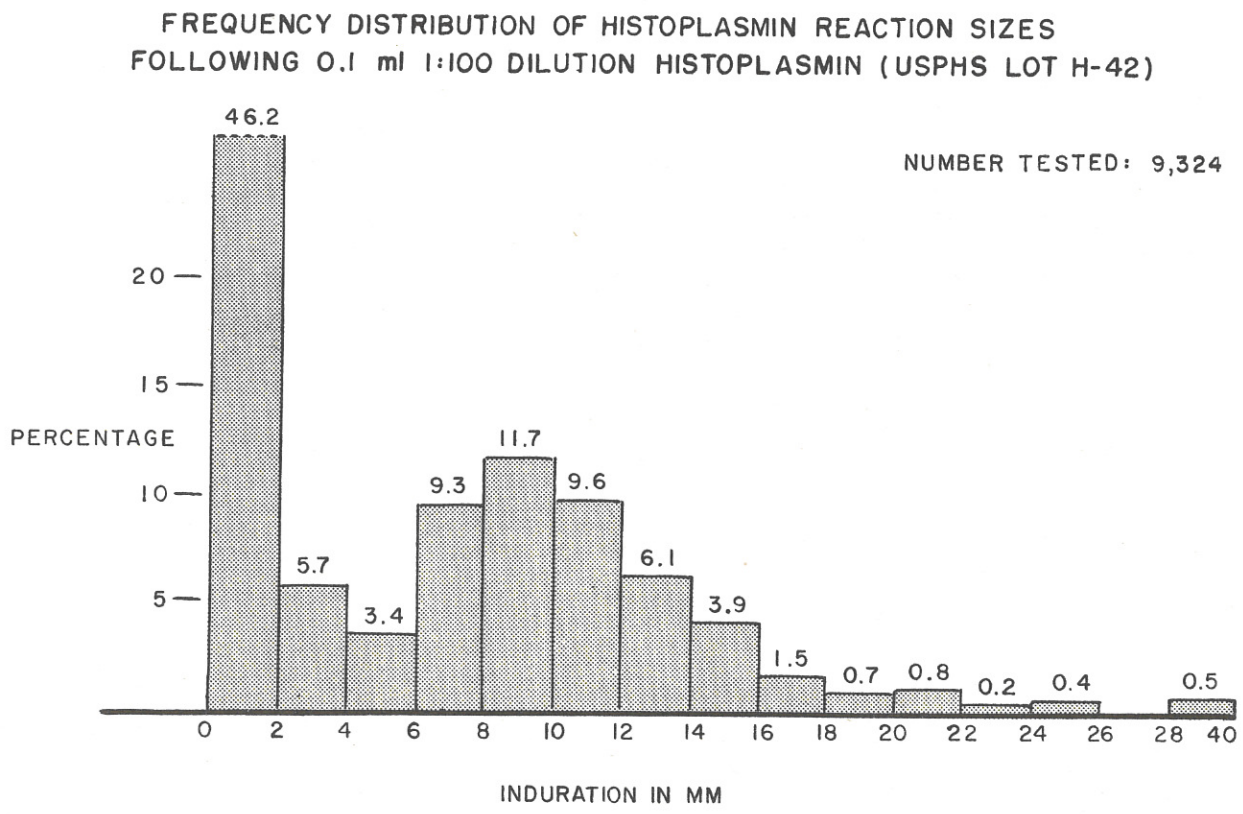
In 1950, Tucker in an effort to determine the "establishment" of Histoplasma capsulatum on the Isthmus, conducted a histoplasmin skin testing survey in 500 patients admitted to the "non-white" wards of Colon Hospital, Cristobal, Canal Zone. This study was later extended to include 1000 patients revealing an overall histoplasmin sensitivity rate of 38.7%.

The opportunity to conduct a survey of histoplasmin sensitivity in the Canal Zone School System as an adjunct to a tuberculin testing program was proffered by Dr. Eric R. Osterberg, Chief, Division of Preventive Medicine and Quarantine, in 1959. The school children represented an ideal population for such a study, and the results of the investigation are the basis for this report.

Materials and Methods

The test population was composed of Canal Zone residents ranging in age from 5 to 19 years, the majority (66%) of whom were attending 15 English language schools. The remaining students were in 7 Spanish language schools.

FIGURE 1.



The consent forms provided personal data including name, age, sex, location and duration of residence as well as space for histoplasmin and tuberculin skin test results. In this manner, all pertinent information on an individual subject was available on one form. In each of the schools the same processing of students was employed to standardize the procedure. One-tenth milliliter of 1:100 dilution of histoplasmin (U. S. P. H. S. Lot No. H-42). Lot was administered intracutaneously in the right forearm while tuberculin was applied simultaneously on the left forearm. Forty-eight hours later, the transverse diameter of induration was measured, by the same individual with a small flexible ruler graduated in millimeters.

Results

Histoplasmin skin tests were completed on 9324 students (6166 United States citizens and 3158 Panamanian citizens) representing 85% of the total enrollment in the school system. The frequency distribution by size of reactions to histoplasmin is presented as a histogram (Figure 1).

Positive results were obtained in 4404 individuals (47. 2%) with 2328 reactors in the group of 4743 males (49. 1%) and 2076 reactors among the 4581 female subjects (45. 3%). The distribution of positive reactors by age showed a progressive increase in positivity with increasing age (Figure 2).

FIGURE 2.

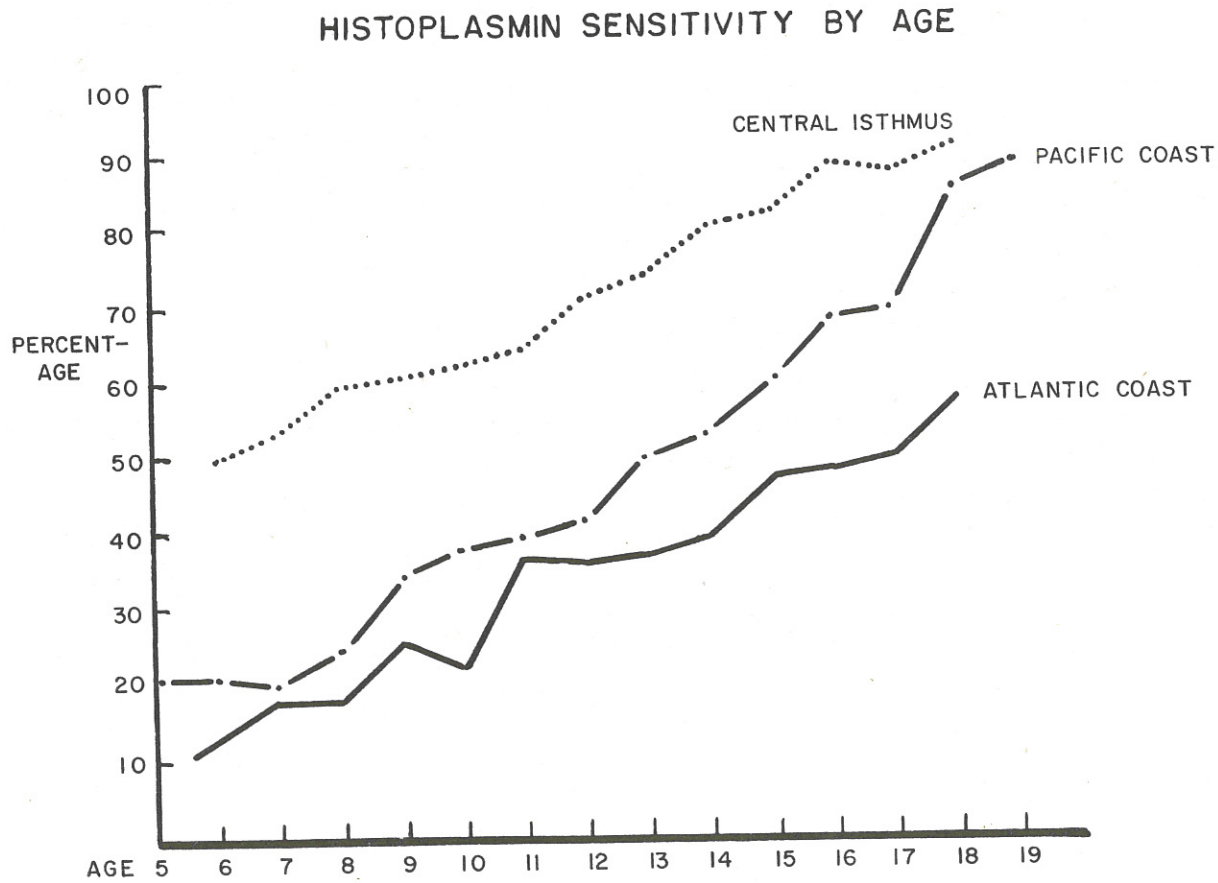


TABLE I.

DISTRIBUTION OF TOTAL POPULATION BY AGE

AGE	POPULATION TESTED		
	TOTAL	NUMBER POSITIVE	PERCENT POSITIVE
5	60	13	21.7
6	701	179	25.5
7	757	200	26.4
8	813	270	33.2
9	808	314	38.9
10	815	336	41.2
11	816	384	47.1
12	1073	536	50.0
13	797	438	55.0
14	711	404	56.8
15	666	402	60.4
16	520	357	68.7
17	444	297	66.9
18	307	242	78.8
19	36	33	91.7
TOTAL	9324	4405	47.24

(ed. note: percent positive computed by BUMED from data in original article.) Geographic location of residence was also shown to be important, with a consistently higher rate of histoplasmin sensitivity among residents in the middle of the Isthmus, less in the Pacific residents and the least occurrence on the Atlantic Coast.

Discussion

The significance of climatic factors, if any, in influencing the observed rate of histoplasmin sensitivity is obscure. The only known difference in environment, which might have influenced the histoplasmin sensitivity, is the closer proximity of Mid-Isthmian town sites to "jungle-like" areas where *H. capsulatum* has been repeatedly isolated from the soil. Further ecological studies of the organism and the reservoirs in nature may outline smaller and better defined areas of endemicity in the Canal Zone.

Figure 2 shows a sustained rise in the rate of histoplasmin sensitivity from ages 6 through 19, with no detectable trend to indicate a maximum at age 19. From these data an additional increase in sensitivity rates would be expected, in persons above 19 years of age, until a maximum rate was attained. Utilizing students as test subjects, the influence of occupation was minimized, thereby increasing the significance of outdoor recreational pastimes. No evaluation of this factor will be attempted.

The value of plotting the frequency distribution of histoplasmin reaction sizes as a technique to separate positive from negative reactors has been previously presented. Utilization of this plot indicates 5 mm is an adequate separation of reactors in this population, and that the distribution resembles those obtained with antigen-specific reactions.

The pattern of histoplasmin reactivity found in this survey combined with 23 recent isolations of H. capsulatum from soil, and three culturally proved disseminated infections within an 18-month period definitely establishes the Republic of Panama and the Canal Zone as an endemic area of histoplasmosis.

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BUDOCKS NOTICE 5100, of 29 October 1962

Subj: Grounding of Electrical Appliances in Navy Family Housing

1. This notice encourages stations to enjoin occupants of Navy family housing areas to ground electrical equipment where grounded three-pole receptacles are provided.

2. A recent report revealed that the teen-age son of a Naval Officer was electrocuted when he plugged in an electrical heating appliance at a Navy family residence. The 115 volt electrical heating appliance was shorted to the case. The electrical service was 120 volt single phase, with three-pole receptacles. The appliance, however, was equipped with a two-wire cord and a two-prong plug.

Incidents similar to this are known to have occurred in Navy housing in past years. As a means of reducing this hazard, the Navy has been providing grounding on new electrical distribution systems of 120 volts, and over, for some years. However, this provision cannot be effective unless electrical appliances used on these systems are wired and equipped with a three-prong plug so as to take advantage of the grounding protection.

— (Safety Section, PrevMedDiv, BuMed)

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Primary Pulmonary Sporotrichosis

Quarterly Progress Report of the Veterans Administration-Armed Forces Study on the Chemotherapy of Tuberculosis, XVII(3): 19, Oct 1962.

A 43-year old white man was admitted to Jackson, Mississippi, hospital on 25 June 1962 with a one-year history of cough, night sweats, exertional dyspnea, and weight loss. There was no history of skin lesions or lymphadenopathy. Physical examination was essentially unremarkable except for the patient not appearing chronically ill. PPD #2 and histoplasmin skin test were positive. Seven sputum cultures grew out Sporotrichum schenckii. Sputum and gastric washings for other fungi as well as for tuberculosis were negative. An intradermal skin test performed with Sporotrichum antigen resulted in a 25 x 45 mm area of induration, but was negative in control patients. Agglutination

studies for sporotrichosis were positive 1:1280. Mouse inoculation for sporotrichosis was positive. Cultures of the scalene node and bronchial washings were negative but patient had received potassium iodide prior to the studies. Chest x-ray showed infiltration involving most of the right upper lobe with cavity formation. A 1959 film taken elsewhere showed a small infiltration in the right upper lobe. By 1961 this had progressed to cavity formation and was essentially unchanged on admission to this hospital.

Primary pulmonary sporotrichosis usually remains localized to the lungs and tends to run a chronic course with cavity formation. Diagnosis is made by culture; and unlike other systemic fungi, it cannot be identified in stained tissue sections. Because of the clinical and radiological similarity to pulmonary tuberculosis, patients may be erroneously treated for tuberculosis. This patient was actually placed on protocol therapy prior to the report of sputum cultures. He has shown excellent clinical response to 40 drops SKKI q.i.d. but little change has been noted by x-ray. Present plans are to continue SKKI for a total of three months. If significant cavity formation and pulmonary infiltration remain, he will be evaluated for surgery at that time. Three cases in the literature recently have been treated surgically with excellent results.

* * * * * *

Type A7 Coxsackie (type 4 poliomyelitis) Virus Infection in Scotland

N. R. Grist, Regional Virus Laboratory, Ruchill Hospital and the University Department of Virology, Glasgow. Type A7 Coxsackie (type 4 poliomyelitis) Virus Infection in Scotland. J Hyg (Lond) 60: 323-332, Sep 1962.

In 1952, Russian workers isolated strains of what they considered to be a fourth type of poliovirus from cases of clinically typical paralytic poliomyelitis. These viruses were later shown to belong to the already-known Coxsackie type A7. Additional strains were isolated from paralyzed patients in a second outbreak in the U.S.S.R., from single cases of paralytic disease in the U.S.A. and Scotland, and from three of nine cases of paralytic Coxsackie infections reported from Switzerland.

In 1959, Coxsackie A7 and Frater virus were jointly responsible for a considerable outbreak of aseptic meningitis in Scotland. Although poliovirus was almost completely absent from the community, there were a number of paralytic illnesses. Coxsackie A7 virus was the infecting agent most frequently associated with paralysis. The present paper describes investigations of the 1959 outbreak of Coxsackie A7 virus infection in Scotland together with additional studies of its prevalence in recent years.

The clinical and epidemiological features of thirty-four cases of Coxsackie A7 infection have been described in detail previously. Coxsackie A7 strains were also isolated in 1959 from three additional patients in hospitals not included in that survey, and the following account is thus based on 37 cases. The outbreak started with one case whose illness began in April,

continued with one in May, reached a peak of fifteen cases in June, diminishing to eleven in July, eight in August, and one in September. With the exception of a male aged 21 years, all the cases were children, twenty-three aged 3 years or less. Males (twenty-four cases) predominated. Most of the illnesses were characterized by fever, vomiting, and signs of meningeal irritation. Paralysis affected seven children, with one fatality. There was a suggestion that illness was more severe in the younger patients.

Coxsackie A7 infection and paralysis.

Paralysis affected the face in one case, one upper limb in three cases (one fatal), one lower limb in two cases, and both the right hand and the right leg in one case. Recovery from paralysis was generally more rapid than would be expected in typical poliovirus infection, but residual paralysis persisted in at least two cases.

Altogether thirteen cases of clinical paralytic poliomyelitis were investigated during 1959. Coxsackie A7 virus was isolated from the majority (7) of these Frater virus from one case and type 1 poliovirus from one case. Four of the Coxsackie A7 and the single Frater virus paralytic infections were in children who had received two or more injections of poliovaccine. The fatal Coxsackie infection developed a fortnight after injection of the first dose of poliovaccine. The single case of poliovirus infection was unvaccinated.

Serological studies of 1959 cases.

Neutralization tests for Coxsackie A7 antibodies were performed with available paired sera from eighty-seven patients with aseptic meningitis, paralytic or encephalitic illnesses. The group included twenty patients from whom Coxsackie A7 virus had been isolated, from eight of whom third sera were collected a year or more after illness.

Serological surveys and investigations of patients in other years show that Coxsackie A7 virus was not new to the community in 1959. Coxsackie A7 infection may have gone unrecognized in the past because of lack of clinical distinction from classical poliovirus infection and failure to utilize the inconvenient diagnostic procedure of suckling mouse inoculation. Until recently the virus may well have been endemic like poliovirus and other enteroviruses, infecting mainly children and causing few cases of paralysis and no sizeable outbreaks. Continued observations are required to detect whether Coxsackie A7 virus will become important as a cause of outbreaks of paralytic disease in polio-vaccinated as well as unimmunized sections of the population.

* * * * * *

Did you know:

That muscle spasms, called congenital myotonia, similar to a human disease, has now been reported for the first time in a thoroughbred horse?

The symptoms included lameness, first noted at 3 weeks of age, which was most marked after a period of rest and decreased after activity. Treatment after 12 months has failed to arrest the symptoms, although the horse remains well otherwise.

It has been concluded that this muscle abnormality may occur more frequently throughout the animal kingdom than has been believed. [1]

That Trypanosoma equiperdum causes a disease of horses in many parts of the world? It is known as "dourine" and is transmitted by coitus. The genital organs show marked edema which is followed by anemia and paralysis. [2]

That the entire northern and central portions of the Island of Taiwan, plus an administrative southern end were areas of high incidence of Japanese encephalitis in 1961? A study of this epidemic was made by the U. S. Naval Medical Research Unit No. 2, Taipei.

The over-all attack rate in 1961 was 7.15 per 100,000 population as compared with 2.91 for 1960 and 6.0 for the entire 5-year period of 1955-1959. The overall case fatality rate, however, was lower than for previous years.

More than one-half of the total cases were reported between 11 July and 10 August 1961. [3]

That according to a recent World Health Organization estimate, some 500 million persons are afflicted with trachoma? Yet some sulfonamides and antibiotics are highly effective against the trachoma virus. In well-conducted trials of mass chemotherapy a cure rate of 75% has been obtained with a single course of treatment, and this has been increased to 90% on repeating the course. [4]

That a compound combining the properties of fungicide, molluscicide, larvicide, and herbicide would obviously be of the greatest value in areas where bilharziasis, malaria, and filariasis co-exist? Recent tests suggest that ziram (zinc dimethyldithiocarbamate) possesses all these properties.[5]

That a unique method of bird control has been developed in which an active substance in their food temporarily incapacitates them? The main bird flock is frightened away by the abnormal behaviour of the treated birds, their warning notes, or by other means of communication. When treated birds recover, they apparently associate their unfortunate experience with the particular environment and avoid it thereafter.[6]

That the use of 50% DDT powder will help keep snakes out of buildings and basements? The powder is dusted around the edges of the walls, into cracks, and onto ledges. Snakes that move over a treated area may be repelled by the irritating effect of the chemical or even killed if they remain in the area. The DDT will also kill many of the mice that run over it.[6]

That a salt water pollution research laboratory to be operated by the USPHS, is being established in Kingston, Rhode Island, to study measures to protect the public from infectious biologic and other toxic pollutants, investigate the effects of pollution on aquatic life, establish criteria for radioactive wastes, and determine the effects of distribution of pollutants by water currents in bays and harbors?[7]

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RESERVE SECTION

Promotion Policy Outlined for Reserve Officers

During the next few months, selection boards will be meeting in Washington, D. C., to choose—from among some 40,000 eligible officers—those Reserve officers best qualified for promotion to the next higher grade.

On pages 1 and 3 of The Naval Reservist, December 1962, you will find information on the Fiscal Year 1963 selection boards, and the Register number of the junior officers in the promotion zones.

Following is a summary of current policies and procedures dealing with the promotion of Reserve officers on inactive duty.

Selection Boards

All promotions in the Regular Navy and Naval Reserve above the grade of lieutenant (junior grade) are a direct result of recommendations by a selection board.

Each selection board is convened by precept from the Secretary of the Navy. This precept lists the board members and establishes the number of officers that may be recommended for the higher grade.

The members of these selection boards are chosen from all parts of the country from among nominations submitted to the Chief of Naval Personnel by the naval district commandants and the Chief of Naval Air Reserve Training. To be eligible for consideration to serve on a selection board, these nominees must meet the criteria set forth in BuPers Instruction 1421.1D. Once the nominations have been made, they are screened, and those officers who meet the requirements are then considered for selection board duty.

Officers who contemplate duty on a selection board should make certain that they meet all eligibility requirements so that they are not rejected before the actual selection phase. Many officers who are nominated fail to reach this point because of their promotional status or because they lack a quadrennial physical examination on record in the Bureau of Medicine and Surgery.

Officers who meet all requirements are then selected on the basis of their qualifications in their designator category—without regard to geographical location.

Establishing Eligibility

To establish their eligibility for consideration by a selection board, officers who are in the promotion zone must be in an active status and have

earned an average of 12 promotion points for each year in grade, computed from 1 July following date of present rank to 30 June of the fiscal year preceding that in which the officer will be in the promotion zone. In no instance will more than 72 promotion points be required for consideration.

The names and records of all officers in an active status (Ready Reserve or Standby Reserve, S-1) who are in the promotion zone and who have established their eligibility for consideration are presented to the appropriate selection board by the Chief of Naval Personnel.

Promotion zones are established after a comprehensive projected study of the Navy's grade structure. The purpose of the study is to assure equitable promotion opportunities among succeeding groups of Reserve officers within the grade limitations established by law. The number of vacancies which are determined by SecNav to be available is based upon a percentage of the total number of officers being considered for the first time (new field). Thus officers who have been considered one or more times (old field) compete with those being considered for the first time to fill these vacancies.

The record of an officer who is eligible in all respects is presented to the selection board regardless of its condition. If a fitness report is missing, and the board determines that the report is necessary for a fair evaluation of the record, the missing report will be requested.

Performance Counts

Promotion is not a reward for past service; rather, it is an advancement based on demonstrated qualification for service in the next higher grade. It is earned by those best qualified, and under conditions of keen competition. In the selection process, the board compares the record of each officer with the records of all other eligible officers.

When the board convenes, it will establish the criteria under which selections will be made. Performance is always the primary factor, and an officer's entire record—including civilian occupation—is considered in measuring performance. The fact that officers may have earned all the promotion points possible, or the fact that they have attended all drills and taken two weeks' active duty for training does not automatically result in selection. These factors enhance an officer's record but do not guarantee his selection.

Many officers compete for promotion on the wrong battlefield. For example, a surface line officer (1105) who drills with a law company and is an attorney in civilian life has the "weapons" to compete with other lawyers. But, since he is considered an unrestricted line officer, he is competing generally with other 1105 officers who have recent seagoing qualifications and are drilling with surface units. Similarly, if an officer being considered for selection is an aviator by designator and is not flying, he still must compete generally with those who are active in a flying status. Officers who find themselves on the wrong battlefield might well consider changing their designator. This would not be a cure for all promotion ills, to be sure, but for some officers a change in designator could prove beneficial.

Dates Are Important

When the recommendations of a selection board have been approved by the President, the officers named are then officially on a promotion list. At this point, the names of the officers selected may be announced for the first time. Actual deliberations of the board, however, are secret and may not be revealed.

At this point, a congratulatory postal card, signed by the Deputy Chief of Naval Personnel is forwarded to each selectee. Following this, individual letters of notification are prepared and mailed which explain the requirements for qualification—professional and physical—and which are sent via the Reserve Officers Recording Activity (RORA) which, by endorsement, advises the officer of his current promotion point status. RORA then forwards the letter to the commandant or command that holds the officer's record for endorsement to the officer-selectee. (The large number of officers being considered makes it impossible to notify those who were considered but not selected for promotion.)

(to be continued)

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